Stability of the super-regenerative ... S/10[illegible]/[illegible]/007/003/005/029
D2[illegible]4/D302

to a Mathieu form and its stability diagram is discussed. For a special case of stability the authors refer to P.L. Kapitza (Ref. 11: ZhETF 1951, 21, 5, 588). There are 1 figure and 11 references: 8 Soviet-bloc and 3 non-Soviet-bloc. The references to the English language publications read as follows: H. Rowe, Proc. IRE, 1958, 46 5, 850; R.G. Smart, Proc. IRE, 1961, 49, 6, 1051.

SUBMITTED: July 27, 1961

Card 2/2

9,2572

S/109/62/007/006/022/024
D266/D308

AUTHOR: Gershenshteyn, M. Ye.

TITLE: Excitation of acoustic oscillations in semiconductor diodes

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 6, 1962, 1055-1057

TEXT: The purpose of the paper is to suggest a possible mechanism for the excess noise phenomenon found in parametric amplifiers employing semiconductor diodes. It is assumed that the acoustic waves in the lattice interact with the electrons, leading to an increase in the fluctuations. The dispersion equation for these waves, derived in an earlier paper of the author, is

$$\omega = \sqrt{(kv_0)^2 + \omega_T^2 \varepsilon^{-1}(\omega, k)} \qquad (2)$$

Card 1/2

√B

Excitation of acoustic ... S/109/62/007/006/022/024
D266/D308

where ω_p - plasma frequency of the positive ions building up the lattice, k - wave number, $\varepsilon_{\parallel}$ - effective dielectric constant of the medium for an axial wave. The conditions for self-generation are:

$$\mathrm{Im}\,\omega > 0, \quad \mathrm{Im}\,\varepsilon < 0 \qquad (3)$$

The second condition is fulfilled when the effective collision cross-section is a decreasing function of velocity. This is proved by assuming that the collision frequency is a function of velocity and separating the d.c. and a.c. terms in the equation of motion. The lower frequency limit is estimated by requiring that the dimensions of the region in the vicinity of contact must be of the order of a few wave lengths. The author states that his results are in qualititative agreement with the available experimental results and believes that further refinement would need a quantum-theoretical approach.

SUBMITTED: May 8, 1961

Card 2/2

39466

S/109/62/007/006/011/024
D266/D308

24.7000

AUTHORS: Gertsenshteyn, M. Ye. and Pustovoyt, V. I.

TITLE: Propagation of space charge acoustic waves in semiconductors

PERIODICAL: Radiotekhnika i elektronika, v. 7 no. 6, 1962, 1009-1013

TEXT: Two approaches are presented: The first and simpler one takes no account of the microscopic properties of the crystal and only assumes the existence of a space charge wave. It is shown on this basis that the a.c. goes to infinity if the phase velocity of the electromagnetic wave agrees with the drift velocity of the carriers (only electrons are considered). The second approach starts with the hydrodynamical equations of charged media

$$\frac{\partial \rho}{\partial t} + \operatorname{div} v_p \rho = 0,$$

Card 1/4

$$\rho \frac{\partial v_p}{\partial t} + (v_p \nabla) v_p = - \nabla P + \bar{q}E - \rho_0 \frac{m}{M} \lambda \nu (v_p - v_-) \qquad (10)$$

where v_p - velocity pertaining to lattice vibrations, ρ - the corresponding charge density, p - pressure, $\bar{q}$ - charge in a volume element in the absence of carriers, λ - 'coefficient of ionization', ratio of the carrier concentration to the concentration of atoms in the lattice, λ 1, E - average value of the electric field in the crystal, ν - collision frequency, v_- - a.c. velocity of the carriers, m, M - mass of the carriers and ions respectively. Neglecting the a.c. density component of lattice vibrations and assuming a plane electromagnetic wave Eqs. (10) are solved yielding the characteristic equation. Introducing

$$\omega = kv_s + \ldots, \qquad (19)$$

ω - frequency of the electromagnetic wave, v_s - velocity of sound in the crystal in the absence of carriers) and assuming that ω_e the following equation is obtained:

$$\mathrm{Im}\,\cdot = \frac{\cdot}{2\cdot}\cdot \frac{2}{2_e}\, \beta(1 - \beta) + \frac{2}{2_e}(1 - \beta)^2 \qquad (21)$$

where $_s$ is the plasma frequency of the carriers, $\beta \equiv v_{=}/v_{ph}$, $v_{=}$ - drift velocity of electrons, v_{ph} - phase velocity of the electromagnetic wave. Growing waves arise if Im $\cdot < 0$, i.e. $\beta < 0$ or $\beta > 1$. The lower frequency limit is given by the condition

$$\omega \gg \tau_0^{-1} \qquad (5)$$

where τ_0 - effective relaxation time of the zeroth harmonic of the distribution function determined by the inelastic scattering of the carriers on phonons. The upper frequency limit is

$$\omega = \frac{1}{\tau_e}\sqrt{\frac{\beta}{1-\beta}} \tag{22}$$

It is conjectured that the excess noise found in semiconductor diodes is caused by this mechanism.

SUBMITTED: July 7, 1961

GERTSENSHTEYN, M. Ye.

Excitation of accustical oscillations in semiconductors. Radiotekh. i elektron. 7 no.6:1055-1057 Je '62. (MIRA 15:[illegible])
(Transistors) (Diodes)

GERTSENSHTEYN, M., kand.fiziko-matematicheskikh nauk

Light will show the gravity waves . Znan.-sila 37 no.12:36-37 D '62. (MIRA 16:2)

(Gravity waves)

GERTSENSHTEYN, M.Ye.; PRAKHIN, P.F.

Measuring the choherence of grid and anode noises of tubes. Izm.tekh. no.11:50-52 N '62. (MIRA 15:11)

(Electron tubes--Noise)

9.9867
24.4500

[illegible]
S/0[illegible]/62/042/001/028/048
B[illegible]/B10[illegible]

AUTHORS: Pustovoyt, V. I., Gertsenshteyn, M. Ye.

TITLE: Gravitational radiation from a relativistic particle

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 1, 1962, 163-170

TEXT: A charged relativistic particle is examined traveling along a given curvilinear path in a magnetic field. As the gravitational interaction is weak, the trajectory is fully determined by electromagnetic interaction. The energy of gravitational radiation is computed. Not only the mass tensor of the particle itself, but also those electromagnetic stresses which are caused by the charge are the source of the gravitational waves, their contribution to the radiation being of the same order as that of the mass. The small additions to the metric tensor correspond to two processes of gravitational wave formation: the usual type of mass and charge emission, and the resonance emission of gravitational waves by the electromagnetic field in the presence of a constant external magnetic field. It is shown that the energy dependence of the intensity of

Card 1/2

34007
S/056/62/042/001/02/048
B104/B102

Gravitational radiation from a

radiation of gravitational waves in the ultrarelativistic case is the same as that of an electromagnetic field. Professor V. L. Ginzburg is thanked for assistance, and Professor L. E. Gurevich for comments. There are 12 references: 7 Soviet and 5 non-Soviet. The four most recent references to English-language publications read as follows: L. Infeld, A. E. Scheidegger. Can. J. Math., 5, 195, 195[illegible]; J. N. Goldberg. Phys. Rev., 99, 1873, 1955; A. E. Scheidegger. Phys. Rev., 99, 1883, [illegible]; P. Havas. Phys. Rev., 108, 1351, 1957.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute imeni P. N. Lebedev of the Academy of Sciences USSR)

SUBMITTED: June 16, 1961

Card 2/2

GERTSENSHTEYN, M.Ye.; PUSTO'OYT, V.I.

High-frequency conductivity of a plasma in the presence of a direct current. Zhur. eksp. i teor. fiz. 43 no.2:530-542 Ag '62. (MIRA 16:6)

1. Fizicheskiy institut imeni P.N.Lebedeva AN SSSR.
(Plasma (Ionized gases)) (Electric conductivity)

GERTSENSHTEYN, M.Ye., PUSTOVOYT, V.I.

Detection of low-frequency gravitational waves. Zhur. eksp. i teor. fiz. 43 no.2:605-607 Ag '62. (MIRA 16:6)
(Gravity)

L 10510-63
ACCESSION NR: AP3000196 S/0115/63/000/005/0044/0048

AUTHOR: Gertsenshteyn, M. Ye.; Lur'ye, Yu. A.; Smirnov, Yu. G. 45

TITLE: Measurement of sensitivity in regenerative circuits

SOURCE: Izmeritel'naya tekhnika, no. 5, 1963, 44-48

TOPIC TAGS: noise temperature, noise figure, receiver sensitivity, regenerative circuit

ABSTRACT: A variation of noise figure measurement at microwave frequencies is described which minimizes some of the usual difficulties, such as the need for high equipment stability during measurement and the problem of change in receiver gain caused by switching in of a noise source. A standard noise source, preferably a gas-discharge tube, and a standard reference signal generator are connected to the receiver in question via a directional coupler of at least 20-db directivity. The signal generator output is calibrated in accurate attenuation increments. Either AGC or a limiter-discriminator stage is added to the receiver, if not already built in, followed by a second detector, an LF amplifier and an output vacuum-tube voltmeter (VTVM). In operation, a reference signal is first applied to the receiver, giving a VTVM reading, then

L 10510-63
ACCESSION NR: AP3000196

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the noise source is switched in, raising the output reading. The meter reading is brought back to its initial level by raising the input reference signal amplitude, which by increased AGC bias reduces the amount of noise passed and maintains the output reference signal virtually constant. The resulting difference in reference signal attenuation settings M is used to calculate the noise figure F by the formula

$$F = Nu-1/M-1$$

in db, where Nu is the ratio of noise source temperature to standard temperature. The accuracy of the method is determined by the resolution of the attenuator settings. It is shown that the output of the second detector, whether proportional to amplitude, phase, or frequency, is a direct function of signal-to-noise ratio, and that errors due to impedance mismatch or equipment instability are minimal. The method was verified experimentally using the variation of limited and frequency discriminator. Orig. art. has: 11 formulas and 3 figures.

Card 2/3

L 10510-63
ACCESSION NR: AP3000196

0

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: SD NO REF SOV: 010 OTHER: 000

ss/ch
Card 3/3

GERTSENSHTEYN, M.Ye.; TIMONOVA, N.V.

Graphical analysis of the stability of systems with negative resistance. Radiotekh. i elektron. 8 no.3:510-513 Mr '63. (MIRA 16:3)

(Amplifiers (Electronics)) (Tunnel diodes)

L 12952-63 EWT(1)/BDS/EED-2/EEO-2 AFFTC/ASD/ESD-3

S/109/63/008/004/030/030 58

AUTHORS: Rabinovich - Vizel', A. A., and Gertsenshteyn, M. E.

TITLE: On relaxations in frequency multipliers with non-linear capacitance ("varactors") 25

PERIODICAL: Radiotekhnika i elektronika, v. 8, no. 4, 1963, 725-727

TEXT: The authors point out that resonance phenomena in ferrous-metal circuits are well known in low-frequency radio-technology. Relaxational oscillations can arise in such circuits by reason of the fact that the resonance frequency of the circuit, involving induction with iron metal depends on the amplitude of the current. A similar situation, they say, arises in the case of circuits using "varactors," i.e., diodes with a non-linear capacitance. They go on to explain that a change in capacitance alters the circuit resonance frequency ω_0. Thus, a circuit with a parametric diode, in terms of its characteristics, has much in common with circuits containing iron. This makes it possible, in principle, to lay out a diagram which would be analogous to a ferro-resonance stabilizer. What the authors are primarily concerned with in the present paper, however, is the generation of relaxational oscillations in high-precision circuits with parametric diodes. They explain that the resonance frequency of the circuit which includes the diode,

L 12952-63 S/109/63/008/004/030/030

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On relaxations in .....

depends on the power P delivered to the diode. A change in tuning of the circuit alters the value of P. Thus, in the simplest case, when the diode receives voltage only on a single frequency, the following closed chain obtains:

$$\begin{tikzcd} P \arrow[r] & U_{=} \arrow[r] \arrow[dr] & C_0 \arrow[r] & \omega_0 \arrow[r] & P \\ & & C_0 \arrow[ur] & & \end{tikzcd}$$

The authors explain that of the two branches of a resonance curve, the left one is stable, while the right one gives rise to the relaxational oscillations. Thus, in cases where only a single frequency is involved, in order to eliminate the relaxations, it is sufficient to place the working point along the stable branch of the resonance curve. The situation is more complicated when there is a combination of oscillations, involving several frequencies.

SUBMITTED: October 16, 1962

Card 2/2

L 12409-63 EWT(1)/EEC(b)-2/BDS AFFTC/ASD/IED-3/RADC Pi-4/Pj-4
ACCESSION NR: AP3003715 S/0109/63/008/007/1145/1155

65

AUTHOR: Gertsenshteyn, M. Ye.; Kinber, B. Ya.

TITLE: On the theory of regenerative systems with random pumping

SOURCE: Radiotekhnika i elektronika, v. 8, no. 7, 1963, 1145-1155

TOPIC TAGS: regenerative system, random pumping, parametric amplifier, regenerative parametric amplifier

ABSTRACT: Equations for constant and variable components of an amplified signal are derived for the case of an arbitrary pumping correlation and a sinusoidal input signal. A general method for solving these equations is given. Formulas for the regular and random component at the output of a regenerative paramagnetic amplifier, as well as expressions for multiplications of two, four, and six random functions, are obtained. These data are derived for two-frequency amplifier circuits without conversion, but they can be easily adapted to other parametric and quantum molecular amplifiers. The proposed methods make it possible to calculate the response of an amplifier to a sinusoidal signal and its statistical characteristics at any with of the pumping frequency spectrum. The presence of a random component results in a loss of information while the signal passes through

Card 1/2

L 12899-63
ACCESSION NR: AP3003715

the amplifier, but this loss may be sharply reduced by correct selection of the modulation method and the elements following the amplifier. Orig. art. has: 52 formulas.

ASSOCIATION: none

SUBMITTED: 24Dec62 DATE ACQ: 02Aug63 ENCL: 00

SUB CODE: GE, MM NO REF SOV: 010 OTHER: 002

Card 2/2

GERTSENSHTEYN, M.Ye.; PUSTOVOYT, V.I.; FILIPPOV, S.S.

Hypersound amplification in piezoelectric semiconductors. Radiotekh. i elektron. 8 no.9:1607-1614 S '63. (MIRA 16:9)

1. Fizicheskiy institut im. P.N.Lebedeva AN SSSR.
(Piezoelectric substances)

TATARSKIY, V.I.; GERTSENSHTEYN, M.Ye.

Propagation of waves in a medium with strong fluctuations of the refractive index. Zhur. eksp. i teor. fiz. 44 no.2: 676-685 F '63. (MIRA 16:7)

1. Institut fiziki atmosfery AN SSSR.

ACCESSION NR: AP4016586 S/0115/64/000/002/0027/0028

AUTHOR: Gertsenshteyn, M. Ye.; Prakhin, P. F.

TITLE: Measuring antenna noise

SOURCE: Izmeritel'naya tekhnika, no. 2, 1964, 27-28

TOPIC TAGS: antenna noise, radio noise, antenna noise measurement, radio noise measurement

ABSTRACT: A simple method is proposed for determining antenna noise by means of standard equipment which measures the noise figure with a reference signal; the method practically excludes mismatch and instability errors. First, the generator 3 and then the antenna 1 should be connected to the receiver 6 (see Enclosure 1). The relative noise temperature of the antenna is given by $\theta_A = 1-(1-M_2)F_0 = M_2-(1-M_2)\theta_0$, where M_2 is the reference-signal level when the antenna is connected, F_0 and θ_0 are the noise figure and the relative noise

ACCESSION NR: AP4019853 S/0181/64/006/003/0879/0887

AUTHORS: Pustovoyt, V. I.; Gertsenshteyn, M. Ye.

TITLE: On the possibility of amplifying flexural waves

SOURCE: Fizika tverdogo tela, v. 6, no. 3, 1964, 879-887

TOPIC TAGS: semiconductor film, phase velocity, dielectric permeability, wave amplification, piezo semiconductor

ABSTRACT: It is shown that in semiconductor films flexural waves could be amplified if the carrier drift speed surpasses the phase velocity of the flexural waves. The equation describing the flexural wave in a thin film is derived with the accompanying dispersion relation. The dielectric permeability tensor for the plasma carriers in a semiconductor is determined next, and the flexural wave amplification condition is stated by means of the inequality

$$\frac{1}{\nu}\frac{v_{T}^{2}}{h^{2}} \ll \omega < \frac{c_{\perp}}{h},$$

where $C_{\perp}$ - transverse wave speed in infinite medium. For a CdS crystal this

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ACCESSION NR: AP4019853

yields $10^4 c \ll \omega \ll 10^7 c$. Expressions are derived for the growth and frequency dependence of amplification, and for CdS the maximum amplification is found to be 50 db/cm at 10 megacycles frequency. The effect of adding a magnetic field on the amplification of the flexural wave is studied. The transfer electron diffusion is shown to decrease under a strong longitudinal field. Numerical calculations show that the increment in intensification for electron-phonon interactions is significantly lower than in piezo-semiconductors. "The authors are grateful to V. L. Ginzburg and L. V. Keldy*sh." Orig. art. has: 42 equations and 1 figure.

ASSOCIATION: Vsesoyuzny*y nauchno-issledovatel'skiy institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy Moscow (All-Union Scientific Research Institute for Physical and Technical and Radio Technological Measurements)

SUBMITTED: 10Oct63 DATE ACQ: 31Mar64 ENCL: 00

SUB CODE: PH NO REF SOV: 007 OTHER: 002

[illegible]YE, M.Ya.; [illegible], [illegible].G.

Special features of regenerative circuit synthesis. Radiotekh. i elektron. 9 no.10:1763-1768 [illegible]

(MIRA [illegible])

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920018-1"

[illegible] EEC(b)/T/EEC(b)-2/[illegible]

ACCESSION NR: [illegible] S/0109/64/009/011/2004/2013

AUTHOR: [illegible]

TITLE: Parametric amplifier with random pumping and simple circuits

SOURCE: Radiotekhnika i elektronika, [illegible] no. 11, 1964, 2004-2013

TOPIC TAGS: parametric amplifier, [illegible] optical pumping

ABSTRACT: A random [illegible] is investigated which is intended for a system with continuous [illegible] in which the random part of the response must be [illegible]. Signal distortion due to random pumping is analyzed; it is [illegible] for a parametric amplifier or for a maser. A case is considered when the pumping [illegible] is represented by a white noise (laser pumping with a single absorption line excited by a lamp or the sun, etc.). Formulas are developed for the average value of amplitude [illegible] and for the statistical characteristics of the random part. Also, an amplifier is analyzed

Card 1/2

[illegible]

ACCESSION NR: [illegible]

[illegible] simple circuits, the sum of whose [illegible] Formulas for the [illegible] of the regular part of the [illegible] relations describing the [illegible] "broadband" and [illegible] [illegible] Orig. art. has: 66 formulas.

ASSOCIATION: none

SUBMITTED: [illegible] ENCL: 00

SUB CODE: EC NO REF SOV: 002 OTHER: 004

Card 2/2

L 1900-66 EWT(d)/EEC(k)-2

ACCESSION NR: AP5024169

UR/0115/65/000/008/0032/0035
621.391.822.083

AUTHOR: Gertsenshteyn, M. Ye.; Boloshin, I. A.

20
B

TITLE: Measurement of the noise factor of optical-range linear receiving systems

SOURCE: Izmeritel'naya tekhnika, no. 8, 1965, 32-35

TOPIC TAGS: optic receiver, receiver characteristic

ABSTRACT: The appearance of lasers had led to the development of linear optical receivers with transmission bands that are relatively narrow in the optical range. The article discusses the determination and measurement of the noise characteristics of such devices, particularly the noise factor, which is a variable permitting not only the calculation of sensitivity, but also an evaluation of the noise characteristics of the apparatus from the standpoint of realization of its physical potential. In the analysis of noise measurements in the optical range, the following characteristics are considered: (1) the noise power of technically feasible noise sources is very low, and (2) in the optical range, the size of radiation sources and resonators are much greater than the wavelength; for this reason, the reception of many types of waves is possible in noise measurements (the systems are of a multimode character). The consequences of these characteristics

Card 1/2

L 1900-66
ACCESSION NR: AP5024169

are considered in a discussion of the measurement of the noise factor of single-mode receivers. The analyzed method of measuring the noise factor makes it possible to determine the noise characteristics of not only an isolated photocathode, but of the entire apparatus making up the receiver. Orig. art. has: 1 table and 12 formulas.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00 SUB CODE: EC, OP

NO REF SOV: 006 OTHER: 002

Card 2/2

GER[illegible], M.Ye.; BOLOSHIN, I.A.

Theoretical noise minimum of linear systems. Radiotekhnika 20 no.8:78-79 Ag '65. (MIRA 18:8)

1. Deystvitel'nyye Nauchno-tekhnicheskogo obshchestva radiotekhniki i elektrosvyazi imeni A.S. Popova.

[illegible], [illegible]; [illegible], [illegible].

Capacitive di[illegible] [illegible] [illegible]. [illegible]. [illegible] : [illegible] [illegible].

[illegible]

[illegible] D[illegible], [illegible].

L 15270-66 EWT(1) IJP(c) AT

ACC NR: AP6004088 SOURCE CODE: UR/0020/66/166/002/0317/0319

50
49
65

AUTHOR: Gertsenshteyn, M. Ya.

ORG: none

TITLE: On the problem of fluctuation in photocurrent

SOURCE: AN SSSR. Doklady, v. 166, no. 2, 1966, 317-319

TOPIC TAGS: photoelectric effect, theoretic physics, quantum physics, semiconductor theory

21, 44, 5

ABSTRACT: The author considers fluctuations in photocurrent in quantum systems where the fluctuations depend on the energy spectrum of the material and the method used for current excitation. The high frequency case is examined where the fluctuation in photocurrent have half the value predicted by the formula which assumes that electron motion takes place according to the laws of classical mechanics and that the various particles are independent. It is assumed that photocurrent is generated in an optically thin transparent layer of a semiconductor by monochromatic radiation of frequency ω_0 which is such that the frequencies ω_0 and $\omega_0 + 2\pi f$ lie above the

UDC: 535.215.12

Card 1/2

2

L 15270-66
ACC NR: AP6004088

red end of the absorption band, while frequencies $\omega_0 - 2\pi f$ lie below it. There are no electrons in the conduction band in the absence of illumination. In this case, the frequency of the exciting radiation is considerably greater than $2\pi f$ and the temperature of the conductor is assumed to be zero which implies the condition

$$kT/2\pi\hbar f \ll 1. \quad (1)$$

The author calculates the fluctuations in the number of carriers in the conduction band within the framework of the quantum model. It is found that the reduction in fluctuations is due to condition (1) and is a quantum effect. Since the correlation of fluctuations in the number of carriers is a property of the spectrum of the semiconductor and is independent of the dimensions, this property should also be observed under conditions of high optical thickness. An experiment is discussed for measuring the noise power at the same photocurrent as a function of the frequency of the exciting light. The theoretical data indicates the possibility of minimizing noises during reception in the quantum region. The author is grateful to Professor L. E. Gurevich for discussing this work. Orig. art. has: 1 figure, 11 formulas.

SUB CODE: 20/ SUBM DATE: 18May65/ ORIG REF: 005/ OTH REF: 001

Card 2/2

L 23182-66 FSS-2/EWT(1) WR
ACC NR: AP6004355 SOURCE CODE: UR/0108/65/020/010/0072/0074

AUTHOR: Gertsenshteyn, M. Ye. (Active member); Boloshin, I. A. (Active member)

ORG: Scientific and Technical Society of Radio Engineering and Electrocommunication (Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi)

60 B

TITLE: Receiving radar signals in the optical band

SOURCE: Radiotekhnika, v. 20, no. 10, 1965, 72-74

24,

TOPIC TAGS: radar, optic radar, radar receiver, electromagnetic field, frequency band

ABSTRACT: The peculiarities of radar reception associated with the quantum structure of the electromagnetic field are theoretically considered when $hf \gg kT$. Two cases are examined: (1) Minimum band, $sB \gg n$; in this case, the receiver measures only real photons and is insensitive to zero fluctuations; the number of received photons is a Poisson-law-distributed random value; under noise conditions, formulas of the classical detection theory may prove invalid. Here, B is the frequency band in space, n is the number of quanta received per second, s is the number of modes discernible by the receiver. Thus, the detection characteristics of the optical band depend on the type of receiver and its regime of operation. Orig. art. has: 7 formulas.

SUB CODE: 17 / SUBM DATE: 01Feb65 / ORIG REF: 011 / OTH REF: 006

Card 1/1 UDC: 621.396.96

L 22780-66 EWT(1)/T JXT(CWW)/WR

ACC NR: AP6008283 SOURCE CODE: UR/0109/66/011/003/0465/0470

AUTHOR: Boloshin, I. A.; Gertsenshteyn, M. Ye.

45
43
B

ORG: none

TITLE: Noise factor of linear receiving antennas in the quantum band 25 B

SOURCE: Radiotekhnika i elektronika, v. 11, no. 3, 1966, 465-470

TOPIC TAGS: laser, optical band, noise factor, receiving antenna

ABSTRACT: A generalized concept of the noise factor applicable to both radio and optical ranges is considered; a general formula for noise is: $P = B\frac{hf}{2}\operatorname{cth}\frac{hf}{2kT}$, where h is the Planck constant, k is the Boltzmann constant, and B is the power passband. For r-f band: $hf \ll kT$, $P \simeq kTB$; for optical band: $hf \gg kT$, $P \simeq (hf/2)B$, which shows that, at "normal" temperatures, the noise amounts to 1/2 quantum per 1 cps of the passband (cf. H. Heffner, Proc. IRE, 1962, 50, 7, 1604). Any noise exceeding this level manifests imperfection of receiving equipment. For example, the excessive noise power of a linear receiving device is:

 UDC: 621.396.883.22:621.378.5

L 22780-66

ACC NR: AP6008283

2

$P_{exo} = (F-1)P = (F-1)B\frac{hf}{2}\,\mathrm{cth}\,\frac{hf}{2kT}$. On the above basis, formulas are developed for the noise factor of a linear-amplifier cascade, an equivalent noise generator, two-frequency parametric circuits, a regenerative parametric amplifier, a laser, and a maser (W. H. Louisell et al., Phys. Rev., 1961, 124, 1646). The authors wish to thank A. A. Kulikovskiy and V. I. Tikhonov for their valuable advice and comments. Orig. art. has: 2 figures and 23 formulas. [03]

SUB CODE: 09 / SUBM DATE: 03Oct64 / ORIG REF: 005 / OTH REF: 004
ATD PRESS: 4229

Card 2/2 BK

L 21519-66 FBD/EWT(1)/EEC(k)-2/T/EWP(k)/EWA(h) IJP(c) WG

ACC NR: AP6008290 SOURCE CODE: UR/0109/66/011/003/0526/0531

AUTHOR: Gertsenshteyn, M. Ye.; Bakhareva, M. F.

ORG: none

47
B

TITLE: The problem of phase relations during amplification in an active medium

SOURCE: Radiotekhnika i elektronika, v. 11, no. 3, 1966, 526-531

TOPIC TAGS: laser, Raman laser, parametric amplification, nonlinear optics, maser

ABSTRACT: A theoretical analysis is made of the amplification of a weak light signal in an active medium. It is shown that in the linear approximation amplification of a weak signal in a two-level parametric medium and in three-level quantum media (including Raman lasers) can be described by the same dispersion equation. Conditions are established under which solutions of this equation correspond to one or the other type of amplification. Special cases of the amplification of transverse and longitudinal waves are considered. Orig. art. has: 16 formulas. [CS]

SUB CODE: 20/ SUBM DATE: 25Nov64/ ORIG REF: 009/ OTH REF: 010/ ATD PRESS:

Card 1/1 dda UDC: 621.378.325.001

L 21549-66 EWT(d)/FSS-2
ACC NR: AP6008293 SOURCE CODE: UR/0109/66/011/003/0537/0538

41
β

AUTHOR: Gertsenshteyn, M. Ye.

ORG: none

TITLE: Realizing power-saving conditions in the optical band

SOURCE: Radiotekhnika i elektronika, v. 11, no. 3, 1966, 537-538

TOPIC TAGS: optical band, optical band communication, laser

ABSTRACT: This formula for power-saving conditions ($B \gg n$) of optical-band communication is developed:

$$C_0 \simeq n \ln\left(1 + \frac{Bx}{n}\right),$$

where B is the frequency band in free space; n is the number of photons per sec; C_0 is the traffic capacity of electromagnetic field; $\beta = C_0/n$, and $x = \frac{n}{B}$. When $x \to 0$, the information content per one photon

$$x \ll 1, \ \beta = 1 + \ln\left(1 + \frac{1}{x}\right),$$

$\beta \to \infty$. It is proven that, for maximum traffic capacity under power-saving conditions, a spacing-pulse modulation (in which information is carried by the spacings) is needed. The second best — the phase-pulse modulation — may require

UDC: 621.376.5.029.67

Card 1/2

L 21549-66
ACC NR: AP6008293

simpler modulators and demodulators. Traffic capacity of a real photon channel has been analyzed by B. Reiffen et al., Proc. IEEE, 1963, 51, 10, 1316. Orig. art. has: 7 formulas. [03]

SUB CODE: 09/ SUBM DATE: 04Apr64/ ORIG REF: 004/ OTH REF: 004/ ATD PRESS: 4219

Card 2/2 BLG

L 21143-66 EWT(m)/EWP(j)/T/EWA(h)/EWA(1) RM
ACC NR: AP6003503 SOURCE CODE: UR/0364/66/002/001/0117/0122

AUTHOR: Silin', E. A.; Motorykina, V. P.; Shmit, I. K.; Geyderikh, M. A.; Davydov, B. E.; Krentsel', B. A.

ORG: Latvian State University (Latviyskiy gosudarstvennyy universitet); Institute of Petrochemical Synthesis, Academy of Sciences SSSR (Institut neftekhimicheskogo sinteza Akademii nauk SSSR)

TITLE: Structural changes in polyacrylonitrile during infrared irradiation

SOURCE: Elektrokhimiya, v. 2, no. 1, 1966, 117-122

TOPIC TAGS: polyacrylonitrile, IR absorption spectrum, electron spectrum

ABSTRACT: The purpose of this investigation was to study the effect of intense radiation on polyacrylonitrile. The selective interaction of radiation on the vibrational energy of individual groups of polyacrylonitrile molecules was assumed. The use of a concentrated IR beam was used to obtain a polyacrylonitrile film with treated sections of a given geometric configuration and degree of conversion. Polyacrylonitrile film was obtained by redox initiation with an average molecular

UDC: 621.315.592 : 547

Card 1/3

L 21143-66
ACC NR: AP6003503

weight of 23000-36000. The films were prepared from 3% polyacrylonitrile solution in dimethylformamide and kept in vacuum to a constant weight. The film thickness was 8-12 microns. The films were irradiated in 10^{-5}-10^{-6} mm pressure chamber through a quartz window about 100 mm from the light source. The spectra of irradiated samples were obtained in air at room temperature. Electronic absorption spectra were taken on an SF-4 spectrophotometer and vibrational spectra were taken on an IKS-14 spectrophotometer. It was found that infrared irradiation produces significant changes in the vibrational absorption spectra of polyacrylonitrile. The IR irradiation increases the mobility of hydrogen in tertiary carbon and facilitates its migration to the nitrile group, >C=NH, which, in turn, produces intermolecular cross-linking. The hydrogen band is formed between the >C=NH group and the neighboring nitrile group. This scheme is supported by the appearance of the diffuse absorption band, shifted toward the 3.45 cm^{-1} region, which is assigned to the valence vibrations of the >N-H...N≡C-group. Electronic spectra also indicate the formation of polyunsaturated bonds. The comparison of the vibration absorption spectra of polyacrylonitrile upon thermal treatment with those of the same material irradiated with IR show that both in their initial and subsequent stages, the conversion process during IR irradiation differs from the conversions which take place during thermal treatment. Conversion of polyacrylonitrile during IR irradiation

L 21143-66
ACC NR: AP6003503

proceeds by the self-accelerating reaction scheme, the rate of which is significantly higher than during thermal treatment. A. E. Krumin participated in the experimental part of this work. Orig. art. has: 3 figures.

SUB CODE: 07/ SUBM DATE: 27Apr65/ ORIG REF: 008/ OTH REF: 012

Card 3/3

L 27159-66 EWT(1) IJP(c)

ACC NR: AP6014049 SOURCE CODE: UR/0056/66/050/004/1084/1094

AUTHOR: Giterman, M. Sh.; Gertsenshteyn, M. Ye.

21
20
B

ORG: Institute of Physicotechnical and Radiotechnical Measurements (Institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy)

TITLE: Theory of the Brownian motion and the possibility of application of the theory for investigating the critical point of a pure substance

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, no. 4, 1966, 1084-1094

TOPIC TAGS: Brownian motion, critical point

ABSTRACT: By virtue of the fluctuation and dissipation theorem, the characteristic features of Brownian motion near the critical point of a pure substance were defined by the particular dependence of the moving particle on frequency of the force acting on it. For a macroscopic particle, the determination of mobility is a hydrodynamic problem. To solve this problem near the critical point, the high compressibility of the liquid and the possible effect of the large radius of the density correlations should be taken into account. General formulas for mobility and Brownian displacement were obtained, and the characteristic frequencies which are important in the critical region were evaluated. It was found that for displacements occurring during periods exceeding the characteristic time $\tau_1 = |\omega_{01}|^{-1}$ (ω_{01} is the

2

Card 1/2

L 27159-66

ACC NR: AP6014049

characteristic frequency), the mean square displacement of a Brownian particle is determined by the usual Einstein equation. For times less than τ_1, the equation also contains a coefficient dependent on the ratio of the displacement and the volume of viscosities. The presence of a large correlation radius for the density fluctuations near the critical point does not significantly modify the nature of the Brownian motion, and, in essence, reduces to a certain degree the Brownian particle radius. These conclusions are based on the assumption that the absence of a strong frequency dependence of viscosity (for periods of fluctuation of the order of the Brownian particle displacement times involved). The authors thank Academician M. A. Leontovich for his advice and discussions. Orig. art. has: 43 formulas. [Based on authors' abstract.] [NT]

SUB CODE: 20/ SUBM DATE: 11Nov65/ ORIG REF: 008

Card 2/2 BK

L 38227-66 EWP(m)/EWT(1)/T IJP(c) GW

ACC NR: AP6024872 SOURCE CODE: UR/0056/66/051/001/0129/0134

AUTHOR: Gertsenshteyn, M. Ye.

ORG: none

21
B

TITLE: The possibility of an oscillatory nature of gravitational collapse

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 51, no. 1, 1966, 129-134

TOPIC TAGS: general relativity theory, gravitational collapse, supernova, gravitation

ABSTRACT: An attempt is made to show that gravitational collapse is not an irreversible attraction of matter toward the center but an oscillatory equilibrium. It is pointed out that Newtonian motion at zero pressure is a classical analog of collapse and is of an oscillatory nature. The latter persists in the associated coordinate systems of the general theory of relativity. For a spherically symmetric conservative motion such as the transition from compression to expansion, there are two possibilities: passage through the center with a nonzero velocity, or a turning point at a finite distance from the center. It is shown that the first case holds in the relativistic case for all possible relativistically invariant state equations such that $p = \beta\varepsilon$, $0 \leq \beta \leq 1$. Oscillatory collapse regarded as a supernova model

L 38227-66

ACC NR: AP6024872

is discussed. Such a model is possible if oscillatory collapse can be observed from the outside, i.e., from the R-region. Orig. art. has: 17 formulas. [CS]

SUB CODE: 20/ SUBM DATE: 09Sep65/ ORIG REF: 012/ OTH REF: 001/ ATD PRESS: 5044

Card 2/2

L 40365-66 EWT(1)

ACC NR: AP6014246 SOURCE CODE: UR/0109/66/011/005/0916/0924

AUTHOR: Boloshin, I. A.; Gertsenshteyn, M. Ye.

ORG: none

B

TITLE: Properties of three-frequency parametric circuits

SOURCE: Radiotekhnika i elektronika, v. 11, no. 5, 1966, 916-924

TOPIC TAGS: parametric resonance, parametric amplifier, parametric converter, multifrequency amplifier

ABSTRACT: D. K. Adams (IRE Trans., 1960 MTT-8, 274) analyzed 3-frequency parametric circuits in which weak signals of f_1 f_2 f_3 frequencies have interesting characteristics and potentialities; f_1 is the input-signal frequency; $f_2 = f_1 - \nu$; $f_3 = f_1 + \nu$; ν is the pumping frequency. The present article analyzes the most important practical case when f_1 is substantially lower than ν and when both side

Card 1/2 UDC: 621.378.01:621.391.82

L 40365-66
ACC NR: AP6014246

frequencies resonate in the same circuit tuned to a near-pumping frequency. It is found that: (1) Such 3-frequency circuits have essential advantages: high input impedance, wide passband, stable amplification equal to the frequency ratio or even higher; (2) In the r-f band, the 3-frequency circuits have no higher noise than the 2-frequency circuits, and are superior to the latter insofar as stability and passband are concerned; (3) In the quantum region, when $\hbar\omega \gg kT$, the 3-frequency circuit has higher noise (5 times as high in selective reception, 2 times in homodyne reception) than the 2-frequency regenerative circuit; (4) The 3-frequency circuit has the important advantage of operating with detuned input without impairing its sensitivity. Orig. art. has: 2 figures, 43 formulas, and 1 table.

SUB CODE: 09 / SUBM DATE: 07Jan65 / ORIG REF: 008 / OTH REF: 006

Card 2/2 hs

GERTSENSHTEYN, R., kand.sel'skokhozyaystvennykh nauk

Fish ensilage. Nauka i pered.op. v sel'khoz. 8 no.11:35 N '58.
(MIRA 11:12)

(Ensilage) (Fish as food)

KAGAN, I.S.; GERSHTEYNKORN, S.Ya.

Calculating the cost of castings. Lit. proizv. no.10:10-13 O '60.
(MIRA 13:10)

(Founding--Costs)

L 29875-66 EWT(1)/EWP(m)/EWT(m)/T WW/DJ

ACC NR: AP6013222 SOURCE CODE: UR/0421/66/000/002/0163/0166

AUTHOR: Gertsenshteyn, S. Ya. (Moscow)

ORG: none

TITLE: The effect of a single rough spot on the appearance of turbulence

SOURCE: AN SSSR. Izvestiya. Mekhanika zhidkosti i gaza, no. 2, 1966, 163-166

TOPIC TAGS: turbulent flow, incompressible fluid

ABSTRACT: The article investigates the problem of the steady state flow of a viscous incompressible liquid past a single rough spot. The solution was investigated approximately with respect to stability. A calculation is made of the additional resistance due to the appearance of a single rough spot. Determination of the friction stress is considered with respect to the pressure drop at a single rough spot. The mathematical development starts with the equation, in dimensionless coordinates, for the plane steady state motion of a viscous incompressible liquid:

$$\frac{1}{r}\frac{\partial(\psi_1, \Delta\psi_1)}{\partial(r, \theta)} + \frac{1}{R}\Delta\Delta\psi_1 = 0 \qquad \left(R = \frac{u_0 d}{\nu}\right) \quad (1.1)$$

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L 29875-66

ACC NR: AP6013222

Here ψ, is the flow function;

$$\frac{\partial}{\partial(r, \theta)}, \qquad \Delta \equiv \frac{\partial^2}{\partial r^2} + \frac{1}{r}\frac{\partial}{\partial r} + \frac{1}{r^2}\frac{\partial^2}{\partial \theta^2}$$

are the Jacobian and the Laplace operator, respectively. Based on the mathematical treatment, the article gives several examples of numerical calculations with the results exhibited in tabular form. "The author expresses his deep indebtedness to his scientific director G. I. Petrov. The author is also deeply grateful to his co-workers at the Institute of Mechanics of the MGU, V. T. Kharin and V. A. Medyedev." Orig. art. has: 11 formulas, 2 figures and 2 tables.

SUB CODE: 20/ SUBM DATE: 06Mar65/ ORIG REF: 003/ OTH REF: 006

Card 2/2

GERTSENZON, I.F.; KOROVCHENKO, T.Z.

Making milk-base fillings from whole milk in coil apparatus.
Khleb.i kond.prom. 1 no.7:39-40 Jl '57. (MIRA 10:7)

1. Konditerskaya fabrika imeni Rozy Lyuksemburg, Odessa.
(Confectionery)

S/133/62/000/001/005/010
A054/A127

AUTHORS: Brovman, M. Ya., Gertsev, A. I., Zelichenok, B. Yu., Krivonosov, Yu. I., Rimen, V. Kh., Sokol, V. N., Mel'nikov, A. F.

TITLE: Investigating the power parameters of the 2800 mill of the Orsko-Khalilovskiy metallurgicheskiy kombinat (Orsk-Khalilovo Metallurgical Combine)

PERIODICAL: Stal', no. 1, 1962, 45 - 48

TEXT: To increase the output of the 2800 mm mill, tests were carried out at the Orsko-Khalilovskiy metallurgicheskiy kombinat (Orsk-Khalilovo Metallurgical Combine), in cooperation with the Yuzhnoural'skiy mashinostroitel'nyy zavod (Southern Ural Mechanical Engineering Plant). These tests were aimed at investigating the motor capacity and the metal pressure on the rolls. The mill consisted of two stands: a 2-high roughing stand (with rolls of 60ХН (60KhN) and 60ХГ (60KhG) steel, barrel diameter: 1,150 mm, roll-neck diameter: 690 mm), and a reversing 4-high finishing stand (work-roll diameter: 800 mm, diameter of the support rolls: 1,400 mm). Carbon and low-alloy steel sheets (Ст.3кп/St.3kp, 14ГН/14GN, 15ХСНД/15KhSND, Ст.0/St.0, Ст.5/St.5), 8 - 50 mm thick, 1,500 -

Card 1/3

2,500 mm wide and 18 m in length are rolled on the stands. The operation of the 2-high stand consists of 4 longitudinal passes, tilting through 90° and 6 - 8 passes for lateral deformation, with 2 - 4 subsequent longitudinal passes. In order to ensure accurate dimensions, a special gauge is used in which several rods of the same height are mounted instead of one and in which the wire pickups are connected in series, thus not depending on the load distribution between the rods. The power parameters were determined by rolling 41 slabs (2.7 - 4.7 tons) on the 2-high and 36 strips on the 4-high stand. The rolling conditions on the 2-high stand are given in a table. The pressure values obtained for the 2-high stand are 1,040 tons during the first longitudinal rolling, 1,940 tons during the lateral rolling and 2,360 tons during the second longitudinal rolling. The metal pressure on the 4-high stand is 2,090 tons, usually the stand works with 1,300 - 1,700 tons pressure and a reduction of 20 - 25%. The pressures actually applied during rolling remain below the permissible level. The results were also checked by comparing them with experimental values for the motor torques, calculated for various metal pressures. The comparison yielded practically identical values. The pressure gaugings were carried out at roll-rotation rates of 30 - 45/min on the 2-high stand and at 60 - 80 rpm on the 4-high stand. By increasing the roll

S/133/62/000/001/[illegible]
A054/A127

Investigating the power parameters of...

speed the metal pressure could be raised by 8 - 10% on the 2-high stand and by [illegible] - 7% on the 4-high stand. The final conclusions drawn from these tests were that the [illegible] and the 4-high stands of the 2,800 mm strip mill are not fully [illegible] St.3 and St.3kp sheets, and, taking into account the motor [illegible] could be increased by 30 - 40%, thus raising the stand [illegible] by [illegible] - 15%. However, actually it is only possible to reduce the number of [illegible] when rolling laterally. The best way to improve the operation of the mill is by modifying the reductions on both stands in such a way, that the reduction in thickness on the 2-high stand be increased thus producing a thinner strip for the 4-high stand. There are 3 figures and 9 references: 1 non-Soviet-bloc and 8 Soviet-bloc. The reference to the English-language publication reads as follows: A. Nadai, M. J. Manjone, Journal of Applied Mechanics, 1941, [illegible].

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Card 2/3

GERTSEV, A.I., inzh.

Construction of grounding stages. Energetik 11 no.11:23 N '63. (MIRA 16:11)

KOVYNEV, M.V., inzh.; ZELICHENOK, B.Yu., inzh.; GERTSEV, A.I., inzh.;
VOZNESENSKIY, V.A., inzh.

Optimum amount of slab reduction in stands with 2800 vertical roll mills. Stal' 23 no.6:529-530 Je '63. (MIRA 16:10)

1. Orsko-Khalilovskiy metallurgicheskiy kombinat.

KOVYNEV, M.V., inzh.; [illegible], [illegible], inzh.; [illegible]
FIDEL', E.L., inzh.; [illegible], [illegible], inzh.

Effect of certain technological factors of [illegible] two-high mill on the shape of the piece. Stal' [illegible] 1013 N '64.

BROVMAN, M.Ya., [illegible], A.I.; [illegible]
V.K., [illegible]

[illegible]
[illegible]

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920018-1"

1. KAPUSTINA, Z.A.; GERTSEV, V.A.

2. USSR (600)

4. Agricultural Machinery

7. Joint work of vegetable and tractor brigades, Z.A. Kapustina, V.A. Gertsev, Sad i og. no. 3, 1953.

9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953, Unclassified.

GERTSEV, V.V.; MAKAROV-ZEMLYANSKIY, Ya.Ya.

Synthesis and study of carbohydrate polycorates. Vysokom.soed. 6 no.8: 1458-1462 Ag '64. (MIRA 17:10)

1. Moskovskiy tekhnologicheskiy institut legkoy promyshlennosti.

CHESHNOV, V.M., kand. tekhn. nauk, dotsent; GERTSEV, V.V., [illegible]

Gas-liquid chromatography of boric acid esters. Nauch. trudy MTILP no.29:131-132 '64. (MIRA [illegible])

1. Kafedry organicheskoy khimii, analiticheskoy i neorganicheskoy khimii Moskovskogo tekhnologicheskogo instituta legkoy promyshlennosti.

L 42962-66 EWT(m)/EWP(j) WW/JW/RM
ACC NR: AR6024994 SOURCE CODE: UR/0081/66/000/007/N019/N019

AUTHOR: Gertsev, V. V.; Makarov-Zemlyanskiy, Ya. Ya.

TITLE: Complexing of mixed boric esters of carbohydrates and simple alcohols with amines

SOURCE: Ref. zh. Khimiya, Part II, Abs. 7N129

REF SOURCE: Nauchn. tr. Mosk. tekhnol. in-t legkoy prom-sti, vyp. 31, 1965, 297-299

TOPIC TAGS: carbohydrate, organoboron compound, amine

ABSTRACT: The reaction of transesterification of boric esters of simple alcohols with carbohydrates forms polyboric esters of carbohydrates. The reaction takes place via a stage of formation of mixed boric esters of carbohydrates and simple alcohols which do not crystallize and do not distil under vacuum, and, when the temperature of the reaction medium is raised, disproportionate to form polyboric esters of carbohydrates. The separation of mixed boric esters of carbohydrates and simple alcohols, where disproportionation was prevented by complexing with amines (benzylamine, diethylamine), was studied. The precipitation of amine complexes of these esters takes place readily from a medium of ethyl or petroleum ether in the form of a white precipitate; there is one amine molecule per B atom chemically bound by the C-O-B ether bond to a carbohydrate group. Five grams of mannitol and 58 ml of $B(OC_3H_7)_3$ are placed in a flask. To the mannitol polyborate obtained are added 60 ml of $B(OCH_3)_3$ and 50 ml of absolute

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L 42968-66

ACC NR: AR5024994

ethyl ether, followed by 40 ml of a 50% solution of benzylamine in absolute ether. Forty-three grams of the complex $C_6H_8[CB(OC_3H_7)_2]_6 \cdot 6NH_2CH_2C_6H_5$ is obtained. Bibliography of 4 titles. I. D. [Translation of abstract]

SUB CODE: 07/

Card 2/2

ZINCHENKO, V.A.; YERSHOVA, N.A.; GERTSEVA, N.M.

Determination of bi- and trivalent titanium in titanium slags.
Titan i ego splavy no.8:242-246 '62. (MIRA 16:1)
(Titanium—Analysis)
(Valence (Theoretical chemistry))

S/075/62/017/006/002/004
I032/I232

AUTHORS: Zinchenko, V.A., Gertseva, N.M.

TITLE: Determination of metallic sodium in the presence of titanium dichloride

PERIODICAL: Zhurnal analiticheskoi khimii, v.17, no.6, 1962, 670-673

TEXT: Metallic sodium in melts containing titanium dichloride is determined gasometrically by the following method. The sample is treated with an aqueous solution of sulfosalicylic acid that has been neutralised with ammonia containing some ammonium chloride. The sulfosalicylic acid forms a stable complex compound with the bivalent titanium ion, which fact prevents oxidation of the titanium ion by ionic hydrogen. The amount of hydrogen gas evolved is therefore equivalent to the amount of metallic sodium in the sample. There

Card 1/2

S/075/62/017/006/002/004
I032/I232

Determination of metallic sodium in the...

are 1 figure and 4 tables. The English language references read: 1. Dean, R.S., Metal Ind. 90, 3, 9,10 (1957). 2. Hanry, T.A., Baker, D.H., U.S. Bur. Mines; Rept. Invest. No.5661 (1960)

ASSOCIATION: (All-Union Aluminium-Magnesium Institute, Leningrad)

SUBMITTED: June 13, 1961

Card 2/2

GERTSEVA, N.S.

137-58-5-11159

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 5, p 327 (USSR)

AUTHOR: Gertseva, N.S.

TITLE: Determination of Copper, Cadmium, Nickel, Cobalt, and Zinc by the Method of Derivative Polarography (Opredeleniye medi, kadmiya, nikelya, kobal'ta i tsinka metodom proizvodnoy polyarografii)

PERIODICAL: Tr. Nauchno-tekhn. o-va chernoy metallurgii. Ukr. resp. pravl., 1956, Vol 4, pp 49-55

ABSTRACT: Comparative determinations of Cu, Cd, Ni, Co, and Zn contained in a NH_4Cl-NH_4OH solution were carried out on an electron polarograph of the TsLA type by the standard polarographic method, as well as by the method of derivative polarography. A sensitivity of 0.05 mg/cc was achieved with the standard method; the sensitivity of the derivative method is approximately one-half as great. It is shown that the derivative method is not effective when the ratio Cu:Cd is greater than one because the Cu ($E_{1/2}$ = -0.5 v) greatly affects the height of the Cd step ($E_{1/2}$ = -0.7 v); the peak of Co ($E_{1/2}$ = -1.2 v) remains unaffected even by a 400-fold excess of Cu. It is noted that the potential of

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137-58-5-11139

Determination of Copper, (cont.)

the peak is displaced in the negative direction by an increase in concentration of the element being determined, as well as by an increase in concentration of the more electro-positive element. It is established that the method of derivative polarography extends the useful range of the polarographic method into concentrations on the order of 8-10 g/liter.

N.G.

1. Metals--Determination 2. Polarographic analysis--Applications

Card 2/2

Gertseva, ...

137-1957-1-5494

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 1, p 56 (USSR)

AUTHOR: Gertseva, N S

TITLE: Polarographic Determination of Bismuth, Copper and Lead Simultaneously Present in a Solution (Polyarograficheskoye opredeleniye vismuta, medi i svintsa pri ikh odnovremennom prisutstvii)

PERIODICAL: Tr. In-ta metallurgii AN SSSR, 1957, Nr , pp 38-40

ABSTRACT: Bi, Cu, and Pb may be polarographed simultaneously against a background of HCl (1:3) and 10 percent tartaric acid. Half-wave potentials are -0.12, -0.34 and 0.4.. b (bottom Hg) respectively. The presence of H_2SO_4 and of an excess of HCl has no adverse effects. When determining Cu gelatin must be added to the solution; however, in this case the calibration curve Bi does not pass through 0. A solution containing Bi, Cu, and Pb is evaporated to a small volume and transferred to a 100 ml flask; 50 ml of the background compound are added, followed by H_2O which is filled up to a marker, after which the Bi is polarographed. Two or three drops of 1 percent gelatin solution are then added to the electrolyzer (approx. 10 ml of the solution) and Cu is-

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137-1957-12-25144

Polarographic Determination of Bismuth, Copper, and Lead (cont.)

polarographed. Pb may be polarographed both with and without the gelatin by taking into consideration the fact that gelatin reduces the diffusion current of Pb. The method described permits the determination of Bi in amounts ranging from 5 mg/l to 500 mg/l in a solution containing six times as much Cu and any amount of Pb. Cu may be determined at concentrations between 10-150, and Pb in amounts starting with 350 mg/l.

N. G.

1. Bismuth-Determination 2. Copper-Determination
3. Lead-Determination 4. Polarographic analysis-Applications

Card 2/2

Gertis.

Translation from: Referativnyy zhurnal, Metallurgiya, ...

AUTHORS: Gertseva, N. S., Khomyakova, Ye. A.

TITLE: Determination of Large Quantities of Titanium by the Polarographic Method (Opredeleniye bol'shikh kolichestv titana polyarograficheskim metodom)

PERIODICAL: Tr. In-ta metallurgii AN SSSR, 1957, Nr ..., pp 4...-144

ABSTRACT: It is established that Ti may be determined polarographically, without being preliminarily extracted from titanium-magnetite ores, concentrates, and slags containing 50-60 percent TiO_2. To obtain a standard solution of Ti, one gram of the metal is dissolved in 125 ml of H_2SO_4 (1:4) accompanied by gentle heating. After adding 500 - 600 ml of water, a stream of O_2 is passed through the solution in order to oxidize Ti^{3+} to Ti^{4+} until the solution loses all color. H_2O is added until the total volume is one liter, and a titration standard is established polarographically by means of a standardized sample containing large quantities of TiO_2. A background compound is prepared by dissolving 18.6 g of Trilon B in 800 ml of H_2O containing

Card 1/2

Determination of Large Quantities of [illegible]

[illegible] ml NH_4OH; [illegible] g of CH_3COONa are added to [illegible] after solution [illegible] by [illegible] ml concentrated H_2SO_4 [illegible] lysis of the Ti) [illegible] filtered and [illegible] make a volume of one liter. A portion of the material [illegible] in a mixture of HF and H_2SO_4. After removal of HF the remainder is dissolved in HCl, transferred to a graduated cylinder and filled with H_2O to a marker. An [illegible] rated to 2-3 ml and, after cooling [illegible] ml flask where it is supplemented by 40 ml [illegible] compound. After ten minutes the [illegible] NH_4OH, using methyl red indicator [illegible] is again added to it, after which [illegible] polarograms [illegible] $E_{1/2}$ [illegible] (bottom Hg). At a Ti concentration of [illegible] the relative error amounted to ±3 percent.

N. G.

1. Titanium-Determination 2. Polarographic analysis-Applications

Card 2/2

GERTSEVA, N.S.

PHASE I BOOK EXPLOITATION SOV/4558

SOV/18-3-5

Akademiya nauk SSSR. Institut metallurgii

Metallurgiya, metallovedeniye, fiziko-khimicheskiye metody issledovaniya (Physicochemical Research Methods in Metallurgy and Metal Science) Moscow, Izd-vo AN SSSR, 1960. 251 p. (Series: Its: Trudy, vyp. 7) Errata slip inserted. 2,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A.A. Baykova.

Resp. Ed.: I.P. Bardin, Academician (Deceased); Ed. of Publishing House: V.A. Klimov; Tech. Ed.: T.P. Polenova.

PURPOSE: This collection of articles is intended for metallurgists and metal researchers.

COVERAGE: The collection contains articles on metallurgy, metal science, and physicochemical research methods. Separate articles discuss the structure and properties of some metals and alloys. The effect of cold treatment and inclusions on the properties of alloys are analyzed, and instruments and

Card 6/7

(23)

MELENT'YEV, B.N.; GERTSEVA, N.S.

Polarography of large quantities of uranium. Trudy Inst.met. no.5: 198-201 '60. (MIRA 13:6)
(Uranium) (Polarography)

G[illegible], [illegible]

[illegible]larographic determinati[illegible] n-Sb [illegible]
G[illegible] alloys. Trudy Inst. met. [illegible] 1958)

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ASTANINA, A.A.; NAGIBIN, V.S.; KUNENKOVA, Ye.I.; BYKOVSKAYA, Yu.I.; VESELYY, L.I.; GOLUBEVA, I.A.; GERTSEVA, N.S.; SLAVATINSKIY, A.S.; SHTEYNBERG, A.N.; NIKITINA, M.V.; Prinimala uchastiye LAPCHINSKAYA, L.L.; PONOMAREV, A.I., otv. red.; DRAGUNOV, E.S., red.

[Chemical and spectrum analysis in metallurgy; a practical guide] Khimicheskii i spektral'nyy analiz v metallurgii; prakticheskoe rukovodstvo. Moskva, Nauka, 1965. 382 p. (MIRA 18:4)

1. Moscow. Institut metallurgii. 2. Analiticheskaya laboratoriya Instituta metallurgii im. A.A.Baykova (for all except Ponomarev, Dragunov).

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Ponomarev, A. I., ed.

Chemical and spectrum analysis in metallurgy; a practical handbook (Khimicheskiy i spektral'nyy analiz v metallurgii; prakticheskoye rukovodstvo) Moscow, Izd-vo "Nauka", 1965. 382 p. illus., tables, index. (At head of title Akademiya nauk SSSR. Gosudarstvennyy komitet po chernoy i tsvetnoy metallurgii pri Gosplane SSSR. Institut metallurgii im. A. A. Baykova) Errata slip inserted. 3000 copies printed.

TOPIC TAGS: analysis, chemical analysis, physicochemical analysis, spectral analysis, slag analysis, steel analysis, iron analysis, alloy analysis, pure metal analysis, element determination, rare earth element determination, impurity determination

PURPOSE AND COVERAGE: This book is intended for specialists and workers at scientific-research and plant laboratories. The book describes chemical, physicochemical and spectral methods of analysing slags, steels, irons, various alloys, and some pure

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metals. The determination of rare and rare-earth elements is outlined. Part I of the book deals with the analysis of slags and the determination of basic elements and usual impurities, and describes methods of determining rare-earth elements. Part II deals with the analysis of cast irons and steels and describes, the determination of usual components and tungsten and molybdenum in the presence of niobium, as well as the determination of tantalum, niobium and cerium. Part III includes analysis of metallic chromium, niobium, titanium, nickel, and their alloys. Methods of determining cerium, indium, and gallium in metals and alloys are discussed along with the determination of rare-earth elements by applying the chromatographic method. Part IV deals with spectral analysis including photographic and other various methods. The following members of the Institute of Metallurgy participated in the work: A. A. Astanina, V. S. Nagibin, Ye. N. Kunenkova, Yu. I. Bykovskaya, L. I. Veselago, I. A. Golubeva, N. S. Gertseva, A. S. Slavatinskiy, A. M. Shteynberg, N. V. Nikitina, and L. L. Dapchinskaya.

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Getseva, R.V.

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International Conference on the Peaceful Uses of Atomic Energy. 2nd, Geneva, 1958

Doklady sovetskikh uchenykh; yadernoye goryucheye i reaktornyye metally. (Reports of Soviet Scientists; Nuclear Fuel and Reactor Metals) Moscow, Atomizdat, 1959. 670 p. (Series: Its: Trudy, vol. 3) 8,000 copies printed.

Ed. (Title page): A.A. Bochvar, Academician, A.P. Vinogradov, Academician, V.S. Yemel'yanov, Corresponding Member, USSR Academy of Sciences, and A.P. Zefirov, Doctor of Technical Sciences; Ed. (Inside book): V.V. Paravoznov and G.M. Pobelintseva; Tech. Ed.: E.I. Mazel'.

PURPOSE: This volume is intended for scientists, engineers, physicians, and biologists working in the production and peaceful application of atomic energy; for professors and students of schools of higher technical education where the subject is taught; and for people interested in atomic science and technology.

COVERAGE: This is volume 3 of a 6-volume set of reports on atomic energy, presented by Soviet scientists at the Second International Conference on the Peaceful Uses of Atomic Energy, held in Geneva from September 1 to 13, 1958. Volume 3 consists of two parts. The first part, edited by A.I. Zubov, is devoted to geology, prospecting, concentration and processing of nuclear source material. The second part, edited by O.L. Zverev, includes 27 reports on metallurgy, metallography, processing technology of nuclear fuels and reactor metals, and neutron irradiation effects on metals. The titles of the individual papers in most cases correspond word for word with those in the official English language edition on the Conference proceedings. See SOV/2081 for the titles of the other volumes of the set.

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GERTSEVA, R.V.; TSYBUL'SKAYA, M.S.; AMBARTSUMYAN, TS.L.; NAZARENKO, N.G.; POLUARSHINOV, G.P.; KHODZHAYEVA, R.P.

New data on hydrous pitchblende and urgite. Zap.Vses.min.ob-va 90 no.5:549-556 '61. (MIRA 14:10)
(Urgite) (Pitchblende)

GERTSFEL'D, A.B. (Riga)

Report on the activities of the Society of Urologists of the Latvian S.S.R. in 1956-1957. Urologiia 23 no.4:77 Jl-Ag '58 (MIRA 11:8)
(LATVIA--UROLOGY--SOCIETIES)

GERTSFEL'D, E. B

Gertsfel'd, E. "On the problem of clinic and therapy of gastro-duodenal ulcers (from the material of surgical clinic)," Zdravookhraneniye Sov. Latvii, 1948, Symposium 2, p. 29-48 - In Latvian language - Author- reference in Russian

SO: U-3850, 16 June 53, (Letopis 'Zhurnal 'nykh Statey, No. 5, 1949)

GERTSFEL'D, E.B.

Abdominal gastrectomy in gastric cancer. Vopr.klin.lech.zlok. novoobraz., Riga 1:190-202 1953

(STOMACH, neoplasms

surg., res.gastrectomy, abdominal [illegible] approach

GERTSFEL'D, B.B.

Extensive surgery in rectal cancer. Vopr.klin.lech.zlok.novoobraz. Riga 2:193-205 1955.

1. Respublikanskiy onkologicheskiy dispanser Latviyskoy SSR (glavvrach - M.G. Sopil'nyak).
(RECTUM, neoplasms,
surg. extensive (Rus))

GERTSFEL'D, E.B. (Riga, ul. Tukuma, d. 10, kv. 1.)

Treatment of anal cancer [with summary in English] Vop. onk. 3 no.1:65-69 '57 (MLRA 10:4)

1. Iz khirurgicheskogo otdeleniya (zav.-E.B. Gertsfel'd) Respublikanskogo onkologicheskogo dispansera Latviyskoy SSR (glavn. vrach-M.G. Sopil'nyak)
(ANUS, neoplasms
surg.)

GERTSFEL'D, Ye.B.

Ten years' experience in abdominal gastrectomy in cancer of the stomach. Vop. onk. 5 no.12:686-692 '59. (MIRA 13:12)
(STOMACH—CANCER)

GERTSIG, J.

"Question on speedy fattening of young cattle."

p. 25 (Mezhduna Rodnyi Selskokhoziaistvennyi Zhurnal, Vol. 2, No. 2, 1958, Sofia, Bulgaria).

Monthly Index of East European Accessions (EEAI) LC, Vol. 7, No. 12, Dec. 58.

SOV/120-59-2-9/50

AUTHOR: Gertsiger, L.N.

TITLE: Magnetic Fieldmeter with Remote Control (Izmeritel' napryazhennosti magnitnogo polya s distantsionnym upravleniyem)

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 2, pp 33-35 (USSR)

ABSTRACT: This instrument is designed to measure constant magnetic fields in the range 300-20 000 oersted in the gap of a large magnet and is based on the phenomenon of nuclear magnetic resonance. The probe unit introduced into the magnet gap is small in size and includes a high frequency signal generator, a crystal detector and one stage of a low frequency amplifier. The basic circuit is shown in Fig 2. The high frequency generator includes a ferroelectric condenser. By applying different d.c. voltages to this condenser its capacity (and consequently the frequency of the generator) may be varied. The capacity of the ferroelectric element is given as a function of temperature in Fig 3 (upper curve). This curve was obtained at 50 cps. The capacity of the ferroelectric element as a function of d.c. voltage

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Magnetic Fieldmeter with Remote Control

applied to it is shown in the lower curve of Fig 3. The capacity changes between 200 and 30 μμF when the voltage changes between 0 and 400 volts d.c. The thickness of the ferroelectric layer was 0.5-0.6 mm. The unit is thermostated and its frequency stability is better than 1% in 3-4 months. The probe may be used in gaps greater than 3.5 cm.

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There are 4 figures and 2 Soviet references.

SUBMITTED: April 17, 1958

8(2), 24(3) SOV/119-59-5-15/22

AUTHOR: Gertsiger, L. N., Engineer

TITLE: A Measuring Device for Magnetic Induction of the IMI-2 Type (Izmeritel' magnitnoy induktsii tipa IMI-2)

PERIODICAL: Priborostroyeniye, 1959, Nr 5, pp 27-28 (USSR)

ABSTRACT: The measurement of constant magnetic fields must often be carried out with a high degree of accuracy. For this purpose, one of the enterprises of radiotechnical industry developed the measuring device IMI-2 for the measurement of magnetic induction and has already started the production of this device. It is based on the nuclear-magnetic resonance and ensures an accuracy of measurement of at least 0.01% in the measuring range of 250-25,000 gauss. The operation principle of this device is as follows: A primary element is introduced into the field to be measured. It contains a sample of the substance to be investigated. The nucleus precesses around the direction of the field similar to a miniature gyro. The frequency ω_0 of this precession is directly proportional to the magnetic field strength $\omega_0 = \gamma H_0$, γ designating the so-called gyromagnetic ratio of the nucleus which is not influenced by any external effect. Besides the constant field H_0, the nucleus should

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be affected by the high-frequency alternating field H_1 which is perpendicular to H_0. The forces arising in this case want to change the orientation of the nucleus in the field H_0. If the frequency ω of the alternating field is equal to the frequency ω_0 of the precession of the nucleus, the orientation of the nucleus in the constant magnetic field changes discontinuously. The block scheme of the device IMI-2 is shown in a diagram. The primary element for the measurement of the magnetic field consists of a cylindrical glass ampule which contains the substance to be investigated. The device IMI-2 uses the resonance of protons, lithium cores and deuterons. Accordingly, ordinary water, a saturated aqueous solution of lithium chloride, and heavy water are used as samples. To increase the resonance effect, a certain quantity of iron perchloride is introduced into the samples. An induction coil is then wound on this ampule. This coil together with a condenser of variable capacity forms the circuit of the high-frequency generator. The different primary elements of this measuring device differ from each other by the operating liquid and by the parameters of the high-frequency coil. In order to cover the measuring range of 250 to 25,000 oersted,

A Measuring Device for Magnetic Induction of the IMI-2 Type SOV/119-59-5-15/22

4 exchangeable primary elements are necessary. The measuring errors of this device are under 0.02%. The accuracy of measurement of the device IMI-2 is not affected by a change of parameters of the wiring, by climatic conditions, or other external factors. An advantage of the device is also the independence of the results of measurement of the accuracy of orientation of the primary element in the magnetic field. There are 2 figures.

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